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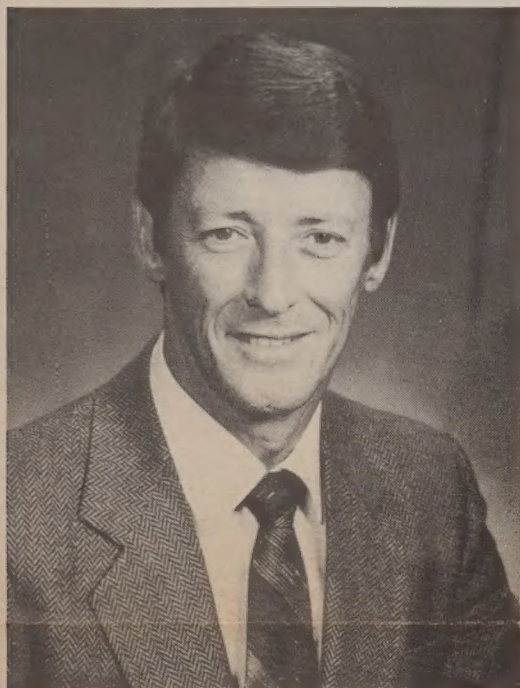
INTERNATIONAL  
YOUTH YEAR 1985

# Education Ontario

Ministry  
of  
EducationMinistry of  
Colleges and  
UniversitiesHon. Keith C. Norton, O.C., Minister  
George R. Podrebarac, Deputy Minister

## Keith Norton new Minister

## University grants up five per cent



1977 to April 1981, Mr. Norton was Minister of Community and Social Services, then became the Minister of Environment. Previous to today's appointment, he had been Minister of Health since July 6, 1983.

Born in 1941 in Claremont, Ontario, Mr. Norton lives in Kingston, where he graduated from Queen's University in 1961. He is a graduate of the Ontario College of Education and taught secondary school in Whitby before returning to Queen's, where he graduated in Law in 1969.

He practised law in Kingston from 1971 until his election to the Ontario Legislature in September 1975, and was Director of Legal Aid at the Faculty of Law, Queen's University, from 1973 to 1975. During his active law practice, he specialized in family and juvenile law.

Mr. Norton served as an alderman for the City of Kingston from 1973 to 1975 and was Deputy Mayor at the time of his election to the Ontario Legislature. As Deputy Mayor, he was also vice-chairman of the finance committee of council, chairman of the community services committee, and chairman of the board of Rideaucrest Home for the Aged. He is also a past member of the board of directors of Kingston Day Care.

Provincial operating grants to Ontario's universities, Ryerson Polytechnical Institute and the Ontario College of Art will increase by five per cent in 1985-86. The global allocation for 1985-86 will be \$1,244,000,000.

Tuition fees in Ontario universities will rise by five per cent. An announcement on capital funding will be made as soon as possible.

With respect to the distribution of the global allocation to the universities, the Minister decided that for 1985-86, the formula distribution arrangements currently in place for 1984-85 should be maintained. In his letter to the Ontario Council on University Affairs, informing the council of the Government's decisions, Colleges and Universities Minister Keith Norton said: "I recognize that the council has devoted much time and effort in developing its advice on funding. The Treasurer has recently indicated that salary and wage settlements in the public sector should be consistent with, and indeed not exceed, those experienced in the private sector, which were slightly above three per cent. In this connection, the Government has established a guideline of three per cent. I believe the Government has made an appropriate allocation to the universities in light of the current outlook on inflation and its continuing policy of fiscal and economic restraint. I assure you that the council's advice was given very serious consideration, and I wish to thank the council for its work."

## School board grants increased by 4 per cent

Provincial grants to Ontario's school boards will increase by four per cent.

Grants to the school boards will total \$3,151,800,000, an increase of \$121.5 million over the 1984-85 printed estimates. The amount includes \$8 million for the purchase of Ontario Approved Educational Microcomputers for use in the schools and \$16 million for special education.

The grants for 1985 are based

upon the Government's recently announced three per cent guideline for public sector wages.

An announcement of additional funds to implement the expansion of the separate school system will be made later. The school boards will receive detailed information on the 1985 grant regulations by the end of March.

The Honourable Keith Norton was appointed Minister of Education and Minister of Colleges and Universities on February 8.

Mr. Norton was first elected to

the Ontario Legislature as MPP for Kingston and the Islands in 1975 and became Parliamentary Assistant to the Treasurer in January 1976. From February

## University Research Incentive Fund selection committee appointed

A six-member selection committee has been appointed to recommend to the Minister of Colleges and Universities the award of grants under the University Research Incentive Fund.

The committee, to be known as the University Research Incentive Fund Selection Committee, is composed of senior representatives from industry, the universities, and government.

The committee will be chaired by Dr. David Strangway, Pro-

fessor, Geology Department, University of Toronto. Other members of the committee are: Dr. Lynn Watt, Executive Vice-Chairman, Ontario Council on Graduate Studies; Dr. Roger Higgin, Assistant Deputy Minister, Ontario Ministry of Energy; Dr. Martin Walmsley, Science Advisor and Energy Coordinator, Ontario Ministry of Natural Resources, and two Ottawa area businessmen, Allan Buchanan, President of

Buchanan Consulting, and Dr. Andrew Deczky, Manager of Signal Processing Technology, Bell Northern Research Ltd.

The three-year program, which was initially announced in last year's budget, provides \$30 million to be used to support research projects which have potential economic benefit for Ontario and which strengthen the partnership between industry and the universities. The program is funded by the Board of Industrial Leadership and Development (BILD) and administered by the Ministry of Colleges and Universities, which will act as a broker to put potential partners (universities and corporations) in touch with each other to develop research projects. Every two dollars invested in an approved research project by the private sector will be matched by one dollar drawn from this fund. Competitions will be held three times a year.

The committee will meet immediately to select projects from those which have been submitted to the Ministry. Announcement of the first awards from the fund is expected before the end of March.

during 1985-86 to meet extraordinary costs directly related to the strike of academic staff, which took place in the fall of 1984, will be the subject of separate consideration.

Tuition fees for the approximately 100,000 college students will be increased at the same rate as the increase in the operating grant. The standard tuition fee will be \$573 in 1985-86.

## Colleges get 5.2 per cent more

The Ontario Government will provide \$487.8 million in operating support to Colleges of Applied Arts and Technology in 1985-86.

This represents an increase of 5.2 per cent over the \$463.6 million provided in 1984-85 and reflects the Provincial Treasurer's statement that three per cent would be "our guideline for public sector wage settlements." Funds required

## Annette Street School celebrates its centennial

Annette Street School, the oldest public institution in the West Toronto area, will be celebrating its 100th birthday on Saturday, May 11, 1985. All former students and staff are invited to come and share their memories of the good old days.

Beginning as a two-room red brick school, the building was enlarged several times to meet the needs of the area it was built to serve. The latest addition, the Senior Section, was formally opened in 1962.

It has been the tradition of the school to work closely with the community where many of its former students still live, and this celebration is no exception. School officials are looking for any memorabilia relating to the history of Annette Street Public School to borrow for their party. Former students (and staff) are needed as volunteers in all areas of preparations. Please contact the school office at 769-1137.

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# Addiction Research Foundation develops innovative learning packages

Ontario's Addiction Research Foundation has a "plan for the '80s" to direct its public education programs for drug abuse prevention. The plan emphasizes alcohol, tobacco and cannabis, the three substances most likely to be used by adolescents and young adults. This focus has influenced ARF to develop a series of innovative learning packages aimed at vulnerable age groups.

"There was very little material on alcohol, cannabis and tobacco available for school children," says Gloria Silverman, one of ARF's community consultants. "We emphasize the introduction of concepts in drug education as a health promotion and drug abuse prevention measure at an earlier age, based on informa-

tion we have on when young people start using drugs.

Every other year, ARF conducts an in-school survey of drug use among Ontario students in grades 7, 9, 11 and 13. The survey helps ARF determine how to tailor its drug education programs. The current theme areas, tobacco, cannabis and alcohol, are based on the latest results of the survey. In 1983, ARF's researchers found that the most popular drugs were still alcohol (71.7 per cent), marijuana (23.7 per cent) and tobacco (29.1 per cent). Alcohol was used by the greatest number of students who used drugs, while the most frequently used drug was tobacco, smoked daily by 69.2 per cent of the students who said they smoked.

Three recently introduced teaching packages, "Butt It Out," "The Score on Cannabis," and "Me and My Friends and Our Booze," are aimed at the age groups which are most susceptible to peer pressure. "Butt It Out," on the harmful effects of smoking, is a cartoon videotape for six to nine-year-olds; "Cannabis" addresses intermediate Division students; and "Me and My Friends and Our Booze" is designed for secondary school students. The three packages were developed by ARF in consultation with the ministries of Education and Health, the Halton Board of Education, TVOntario and the Canadian Cancer Society and have been distributed at no charge to Ontario school boards through

ARF centres located across the province. More videotapes are in the works dealing with alcohol and cannabis for Junior Division students.

The teaching kits are multimedia packages geared toward classroom use and follow-up discussion. Students are first presented with a videotape and then given photo stories, buttons and stickers to reinforce the message. Each kit contains a resource guide for the use of the teacher.

"Butt It Out" introduces four distinct puppet characters, a research scientist named Dr. Cooper, his assistants, a mouse named Martha and Melvin, a dog, and a smoking robot. The robot becomes the subject of an experiment to show the hazardous effects of cigarette smoking. The characters appear in an accompanying pamphlet in a cartoon format that's colorful and easy to read.

"The Score on Cannabis" shows how peer pressure can influence young people to smoke marijuana. The videotape focuses on Mike, a popular student who's a finalist in a video games championship; his girlfriend, Tina, who wants him to unwind with some "weed"; his friend, Gary; and the school pusher, Rick, who tries to add Mike to his roster of clients. Mike is at the centre of an argument on whether marijuana is a

harmless relaxant, as Rick and Tina suggest, or a drug that makes users sluggish and unfocused.

The most sophisticated video package is "Me and My Friends and Our Booze," which explores the popular myth that the people portrayed in beer commercials have more fun. In this entry a group of high school students become the actors in a beer commercial. Rather than the fun-loving people depicted in beer advertisements, however, the students become increasingly obnoxious with every drink over the limit. To highlight the dangers of drinking and driving, the video takes viewers on a trip through the human body and demonstrates the physiological effects of alcohol.

ARF supplements these key in-school programs with a comprehensive publication series, fact sheets on various substances, youth forums and a variety of other programs, such as a magic show on substance abuse and a play written and performed by high school students, called "Booze". Consultants at ARF's local offices also assist school boards with other activities relating to drug education, including: curriculum development, teacher training, policy development, resources information and special programs geared to specific community needs.

# Alliance for children holds February seminar

To achieve quality in the provision of special education, the school and community need to promote partnership among many service professionals, teachers and parents.

That theme was examined and debated by many professions at a one-day seminar presented by the Alliance for Children at Queen's Park in February.

More than 200 educators, parents, professionals in child and family services, and government administrators attended the seminar, which was billed as *A Co-operative Approach to Quality Special Education in the 80's and beyond*.

Plenary sessions, panels and workshops were greeted with enthusiasm and determination to consolidate partners before September 1, 1985, the date when the Bill 82 amendments of the Education Act become legally binding on all school boards across the province.

Keynote speaker Dr. Madeleine Hardy, director of education of the London Board of Education, said that today's parents are more eager to become

involved, more affluent, better educated and imbued with a spirit of consumerism. They demand greater responsiveness and accountability. The smaller size of today's families enables them to take greater interest in the education of the fewer children they have.

"Educators should welcome this trend, encourage the involvement of parents, and work to foster a spirit of co-operation."

The seminar featured three panel presentations: a multidisciplinary approach to human resources; the role of parents in the communication connection; productive collaboration across the province.

The panel discussions afforded about 15 speakers from different disciplines the chance to share perspectives and voice concerns. Some panelists identified the need for greater understanding of why some parents are deterred from becoming involved in the process of providing special education for their children.

It was noted that parents still feel intimidated by the Identifi-

cation, Placement and Review Committees (IPRC) process, and that, accordingly, the special education partners should make more information available to parents. Parents should be encouraged to ask questions and learn about their rights. Special efforts should be made to reach all parents.

Another theme voiced by several panelists concerned the need to avoid rigidity in the provision of special education. Flexibility and creativity are more desirable. One speaker highlighted the difficulties faced by parents whose children do not "fit the system" and maintained that the solution to such problems is to make the system fit the exceptional child.

Parents, it was emphasized, are the first educators of their children, and, while teachers come and go, parents are the constant factor in children's lives. Teachers have much to learn from parents, and vice versa, and the recognition of this fact will do much to foster the respect necessary for effective cooperation.

# Independent Learning Centre honours students

Four Ontario residents recently won scholarships for academic achievement from the Ministry of Education's Independent Learning Centre (ILC), the largest correspondence institution in the country.

Khuyen Dinh Van of Mississauga, Marie Rochard of Toronto, Linda Taylor of Scarborough and Beverly Webber of Ottawa each received \$300 scholarships in ceremonies that took place in Toronto, Ottawa, Hamilton, Windsor, London, Barrie and North Bay in February and March. Fifty-two other correspondence students received \$50 awards of merit.

Linda Taylor, 21, left school in 1979 with marks in the 50s and 60s. She found a job packing cups in a factory where her mother also worked. "I realized I wasn't getting anywhere because of my lack of education," Linda said of her decision to try correspondence education. She took her first course with the Independent Learning Centre in 1981. She has since completed Grade 12 with ILC as a mature student and received final marks in her math and business courses of 99 and 100 per cent. Linda now works for a John Howard Society halfway house and looks forward to a career as a correctional services officer.

Marie Rochard moved to Ontario nine years ago from her native France and became a full-time babysitter. The 29-year-old woman completed all her Grade 13 credits with ILC. Consistently high marks also made her an Ontario scholar. Pursuing a life-long interest in children, Marie is now in her first year of nursing at George Brown College.

Beverly Webber is one of ILC's many "mature" students, who continue their education after marrying and raising families.

Beverly left high school in Ottawa in 1946, married and raised her son before deciding to return to the work force. The 54-year-old woman went to Algonquin Community College to brush up her business skills. She started correspondence education with ILC two years ago and completed four senior credits and was awarded maturity credits. All her grades were in the 90s, and Beverly scored 100 per cent in an accounting course.

Twenty-six-year-old Khuyen Dinh Van moved to Ontario from Vietnam four years ago and had to find a job immediately to support his two brothers until his parents joined them. While working 12 hours a day, seven days a week as an electro-chemical machinist, Khuyen took ILC's mathematics of investment, calculus, algebra, physics and chemistry courses. All his grades were in the 90s. Because of his lack of time, Khuyen chose correspondence education. "I tried night school courses, but it took too much time to travel to school," he says. "At home I could prepare for exams whenever I had time." The 26-year-old completed six Grade 13 credits with ILC and qualified for an Honours diploma. He is now in his first year of studies in electrical engineering at the University of Toronto.

The Independent Learning Centre, the largest independent study institution in Canada, attracts more than 40,000 new students each year. More than 70,000 Ontarians take courses through the Centre. Over 200 elementary and secondary school courses in both official languages as well as courses in English as a Second Language are offered by the Centre. All courses are available at no charge to qualifying Ontario residents.

# Bovey Commission reports

Higher tuition fees and decreased enrolments in Ontario universities were two of the recommendations contained in the report of the Bovey Commission, released January 15.

The Commission, headed by retired industrialist Edmund Bovey, was appointed last year by former Minister of Education and Colleges and Universities Bette Stephenson to deal with the issue of the future of Ontario's 15 universities.

Allowing universities to set tuition fees by up to 18 per cent over ministry formula fees would raise an extra \$15 million this year, the commission said. At present, universities are permitted to raise their fees up to 10 per cent more than the formula fees. The additional \$15 million could be spent in two ways: \$10

million in capital grants to universities to build and repair facilities and \$5 million to revamp the student assistance program. The report suggests that in Phase II tuition fees make up 25 per cent of university operating budgets, instead of the current 16 per cent.

Among other highlights of the report:

- Universities should be allowed to decrease enrolment between four and eight per cent, without financial penalty. Provincial grants are now linked to student enrolment.
- The province should establish a \$154 million fund to hire 550 young professors in Ontario universities between 1985 and 1989. The new recruits would replace retiring faculty. In 1982-83, more than 30 per cent of Ontario's uni-

versity teachers were over 50, but only 12 per cent under 35.

• Universities conducting expensive, equipment-related research should receive additional provincial funding. It is recommended that the province provide \$54 million to support the research activities of the universities. In addition, the federal government should annually contribute \$71 million more to university research to help defray overhead costs.

The report recommends that a new advisory body replace the Ontario Council on University Affairs. The new body should have more responsibilities and staff, the report states. OCUA currently advises the ministry on matters related to the province's universities.



# A provincial policy response to the high-tech impact on Education

A Paper Delivered to the  
Carleton-Edinburgh Joint Seminar on  
"High Tech Impacts on Education"

by  
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Ministry of Education, Ontario

The new information technologies are rapidly becoming "key technologies" whose utilization in all sectors of the economy is essential. This circumstance, as well as the characteristics of the technology, creates several reasons why it is becoming of intense interest to educators and those responsible for public policy in education.

There are several substantial reasons why the new information technology creates policy issues for education and training and why public programs should be designed to address them.

The symbols and processes involved in the use of computers and the new information technology generally will condition cognition and hence learning in ways we as yet know little about.

The symbols and processes involved in a particular form of communication determine in large measure the nature of the cognitive processes set up and the learning which follows. To the extent that computers use traditional forms of writing (and around the corner, traditional forms of voice communication) we can expect that their effects on cognition and learning will be such as we are familiar with. But computers also use many writing processes and forms of language and symbol systems that are unique, and the widespread use of these may well have general effects on learning which we do not yet understand. If for no other reason, it would seem necessary to monitor the effects on learning of the use of the new technology so that facilitating and/or compensatory steps can be taken in general education.

If effectively used in the instructional process, the new technology seems capable of significantly advancing progress towards a number of important and highly desirable educational goals, goals towards which further progress seems unlikely with the conventional techniques and resource levels now available.

Well-designed software can dramatically increase the degree to which instruction can be individualized. Branching instructional sequences can be devised, which accurately identify the student's prior knowledge and provide an appropriate starting point, which can adjust the size of the conceptual steps in the learning sequence to the student's ability, which can identify conceptual errors the student may make as the instructional sequence develops and deploy remedial sequences as appropriate, which evaluate student achievement both formatively and summatively, which can record these results if desired and generate an individual profile of each student's pattern of learning, and which can permit each student to progress at his or her own pace.

Even simple "drill and practice" type programs, if effectively deployed, can increase the degree to which individual needs can be met in the school or classroom.

Well-designed software can also dramatically improve the mastery of content. In conventional practice, we are reasonably satisfied if most of the students master most of the intended curriculum. The large divergences among the "intended" curriculum, the "implemented" curriculum and the "achieved" curriculum, are well documented. Techniques for "mastery learning", such as those advocated by Professor Bloom of Chicago, which can lead to almost 100 per cent of the students assimilating close to 100 per cent of the intended curriculum, have been developed and well proven in relatively small scale pilots. There has not, however, been an effective delivery methodology for "mastery learning" such that it could be routinely applied on a large scale. The new technology now provides that capability.

Finally, there is evidence, by no means complete as yet, which seems to indicate that the rate of cognitive development can be significantly accelerated, and the range of concepts which can be dealt with at each stage of development can be significantly expanded. An important condition for this seems to be access by students from a very early age to computers which they can use in a creative open-ended exploratory mode with the assistance of software tools such as Dr. Papert's "LOGO" language.

Accelerating intellectual development, improving student mastery of the intended curriculum, and greater responsiveness to individual differences have for generations been major objectives for educational researchers, cognitive psychologists, instructional designers, practising teachers and educational administrators and policy makers. The very real potential of the computer to assist in achieving these outcomes makes it directly relevant to the central processes of education.

Modern information and communications technologies create new possibilities for the delivery of educational services.

Most formal education is now institutionally-based. All strategic appreciations point to the growing need for continuing education generated by accelerating change. It is unlikely that we can afford to meet these exploding needs through conventionally delivered, institutionally-based education and training. By reaching directly to the home, the public library, the storefront, the shopping mall, the office and the shop floor, the new technology provides alternative and

more flexible modes of delivery, which will be increasingly needed.

General use of the new technology will force significant changes in the roles of teachers and institutions.

If the pedagogical potential of the computer is fully exploited, it can effectively perform many of the functions which now constitute much of the routine work of the teacher, such as developing new concepts, devising and presiding over drill and practice in relation to them, and evaluating and recording student achievement. If "training" is instruction for which a specific skill or knowledge objective can be specified, then it seems possible that the use of the computer may ultimately result in the automation of the "training" component in education.

The role of the teacher must, therefore, increasingly emphasize those functions which go beyond "training", such as:

- Developing higher cognitive understanding through the use of associations, analogies and extensions of thought.
- Developing communications and social skills through group activities and using these to create understanding of the human and moral dimensions of what has been learned.
- Designing and reviewing instructional materials and deploying them as required.
- Personal counselling and diagnosing.

If teachers cannot place greater emphasis on these aspects of their role, aspects which have always been recognized as ultimately the most important, then "schools" will not be recognized as places where "value is added" to basic learning. In this case, the power of the technology to bypass the school and deliver directly to the home or place of business could lead to a form of de-institutionalization of formal education.

All societies look on their educational systems as a means of transmitting cultural values and national identity. Mechanisms exist in all jurisdictions to ensure this result. The new technology has exceptional power to leapfrog those mechanisms and, therefore, poses basic policy issues for those responsible for the content and governance of public education.

The emergence of the new information technologies as "key" technologies and their dominance in economic life will have an impact on the content of education in several ways.

If the role of education is to help people understand the nature of the world in which they live, and if the new information technology is a dominant element in that world, then the nature of this technology and its effects must become a subject of education, if only in a phenomenological sense.

If education also has the role of helping young people prepare themselves to earn a living, then the skills and understanding needed to make effective use of the new technology must also enter the content of education.

There is a hierarchy of such skills and knowledge, ranging from a widely diffused basic

knowledge and familiarity, sometimes called "computer literacy", which must become an element of basic education, to the special skills and more advanced knowledge needed to design, build, maintain, use and apply the new technologies. These skills are rapidly becoming essential to a society increasingly dependent on the new information technologies and are a direct and reasonable charge on the education and training systems.

The system of basic education must help develop in the general population some degree of psychological "comfort" with and acceptance of the new technology and the need to apply it.

International competitiveness requires the application of the new technologies to all sectors of the economy. In addition to the higher level skills and knowledge this requires, basic education must assist in achieving not only a widely diffused general competence and familiarity with the technology but some degree of personal comfort with technology and an openness and lack of fear in applying it. This is the affective component of the "computer literacy" referred to previously. Without it, the technology will not be applied to the extent our economic well-being will require, and individuals will feel estranged from the world in which they must live and work.

A further set of affective objectives to which education must contribute follows from the likelihood that the communications revolution, like the industrial and agricultural revolutions before it, will catalyze profound social changes.

The concepts of "work" and "leisure" will clearly be re-defined, for example, and this will lead to a need to decouple one's self-image from close association with a specific professional role. Economic growth in an information society will depend upon the utilization of the technology to provide new services not yet imagined. The skills and attitudes of creative entrepreneurship will be very much needed. Self-confidence in the information age will derive from security in the knowledge that one can learn and re-learn as necessary, not from mastery of specific skills or a fixed body of facts or from the certainty of a well-defined and stable occupational role. These affective needs must become consciously defined educational goals if we are to live in a civilized and humane way in the world ahead.

Significant industrial development potential exists in the local procurement of the hardware and software needed for large-scale use in education. Several of the points raised previously link the need for educational policy review to necessary economic adjustments. The potential for industrial development introduces a shorter term and more specific economic factor. Even if modest ratios of microcomputers to students are contemplated, say one to 15 or 20, very large potential markets are created for hardware specifically adapted to educational use. Most micro-computers currently on the market have not been specifically designed with educational use in schools as the primary purpose. These factors create a marketing niche which can be consciously exploited to assist the development of a domestic educational microcom-

puter design and manufacturing capacity.

Of even greater potential importance is the opportunity to create a domestic educational software development industry. For cultural imperatives, and to secure adherence to local curriculum objectives, it has always been considered important that the basic learning materials in the schools be domestically produced. This is as important with respect to the new electronic media as it has always been with respect to the older print media. This is a happy instance when reasons of educational and cultural policy coincide exactly with industrial development objectives. Micro-electronics are an important developmental sector in all jurisdictions. Within this envelope, a viable software development capacity is particularly important. Educational software is a distinct subdivision of this sector, the development of which will assist the viability of the software sector generally. Expertise developed in meeting local needs may also lead to export opportunities. The domestic procurement of both hardware and software to meet domestic educational needs and to stimulate the expansion of the domestic microelectronics industry, is emerging as an important policy objective in several jurisdictions.

These considerations outline the basic reasons why public authorities consider that the "communications revolution" poses significant policy issues for the education and training systems and why public programs are being, and should be, designed to address them. It is not generally the case that important educational reasons for action are buttressed by imperative economic and societal reasons. It is this powerful combination of motivating forces that set the new information technology apart from earlier technologies, which have also had the potential to have an impact on education. It seems likely that formal education will not be able to set aside the claims for attention generated by these new technologies as easily as it has the claims of many of the older technologies.

The Ontario Ministry of Education has been engaged for some time in a process of strategic planning, which has attempted to identify the nature of the challenge to education posed by the new information technology. This was followed by a process of policy analysis, which has led to a relatively comprehensive and integrated set of programs addressing that challenge. The balance of this paper outlines the main features of the programs which have been devised.

Our strategic appreciation concluded (to no one's surprise) that the "communications revolution" was a reality, that Ontario's economy was of a nature that required full application of the new technology in order to survive at an acceptable level in the "information age", and that the new technology posed the kinds of issues which were outlined in the earlier part of this paper.

It was clear, therefore, that in a general sense, we had to strive as a society for a high degree of competence in the new information technologies.

*Continued on last page*



## Impact on education (cont.)

Because these technologies are "key" technologies, and their adoption will force both economic and social restructuring, this "competence" cannot rest on a relatively small cadre of "experts". Although highly developed expertise is essential, the new technology cannot be widely implemented unless there is a wide dispersion of understanding about its basic nature. Everyone must understand the absolute need to apply it and the kinds of changes its use will propagate and possess the ability and willingness to use it or devices based on it in a natural and positive way.

The education system, broadly defined, is essential both in developing the special expertise that is needed and also in achieving the broad dispersion of skills, understanding and acceptance on which the application of that expertise depends.

In general, education is adaptive to changes which have occurred rather than anticipatory of them. This cannot remain the case, considering the rapidity with which the communications revolution is developing. In the western world, the transition from a hunting-gathering society to an agrarian society took a thousand years. The essential elements in the transition from an agrarian to an industrial society took a hundred years. It was felt that if Ontario could not position itself, at least attitudinally, in the next 10 years, it was doubtful that we could maintain our present relative position within Canada or internationally.

Education and training must, therefore, be anticipatory and strive to shape and condition public attitudes before the event as well as react to it after. The challenges posed to education by the communications revolution are unique in that respect. This general conditioning of attitudes so that the new technology is accepted and used with some understanding involves the following more specifically stated goals:

1. The system must be able to identify rapidly and respond at all levels to emerging needs for special expertise related to the development, deployment and utilization of the key technologies.
2. The general program must provide broad opportunities to develop the prerequisite skills, knowledge and attitudes pupils will need as a foundation on which to build this special expertise.
3. It must become an objective of general education to provide everyone with some basic familiarity with and understanding of the new information technology and its implications.
4. The technology itself must be used to the greatest possible extent to accelerate and improve student learning and hence improve the productivity of the system.
5. The technology must also be used to supplement the formal delivery of education and training by institutions and provide alternative modes of delivery to the extent that may be required.

These objectives are mutually supportive. The new learning demands on the education and training systems cannot be achieved unless the productivity of the system, is substantially

improved. Hence the fourth objective significantly enhances the ability of the system to achieve the first three. The technology, if efficiently designed and utilized, can provide the necessary productivity improvements. General use in education and training from the earliest levels will create the basic understanding and acceptance of the technology that its widespread application in the Ontario economy requires and will in itself open a significant industrial development opportunity. The last provides an alternative, and in some respects a fail-safe, if the institutions cannot cope in sufficient measure or react quickly enough to emerging needs.

These considerations generated a two-fold goal with respect to education and the new information technologies. The first: to ensure that the education and training systems are capable of providing the knowledge, skills and attitudes about these technologies that are needed in a world in which they are the principal tools. The second: to make the best possible use of the new technologies in improving learning. A further major purpose of the Ministry would be to ensure the mutual support inherent in these goals.

The basic elements in the Ministry's general approach to achieving these goals include:

1. Encouraging and facilitating the use of computers and the new information technology generally in all subjects and at all levels in the system wherever they can improve student learning and assist the student's intellectual and creative development.
2. Achieving general understanding, acceptance and "comfort" with the new technology, not through special courses but by having students from the earliest grades use computers in a natural way as personal learning tools.
3. Making sure that opportunities are widely available in the secondary schools, Colleges of Applied Arts and Technology and universities to develop the special knowledge and skills needed to develop, use and maintain the new key technologies.
4. Managing the development and acquisition of the necessary hardware and software so that as much as possible it contributes to industrial development by helping establish an Ontario-based educational software and related hardware sector in the microelectronics industry to assure local needs and provide export opportunities.

To give effect to this strategy the Ministry has initiated as comprehensive a series of programs as the available means allow, of which the following are the chief elements:

### 1. Establishing Strategic Direction

The Ministry over the last six years has placed considerable emphasis on establishing a strategic planning process whose purpose is to examine the validity of current and proposed objectives in the light of current conditions and those which can be reasonably anticipated in the 20-year time-frame within which educational planning must operate.

The essence of the strategic appreciation emerging from this

work, as it applies to the new information technology, has been outlined in the first half of this paper. The programs which have been initiated are a concrete example of the translation into action of strategic conclusions. To ensure the continuing long-term relevance of these programs, the Ministry is maintaining a constantly revised appreciation of the potential effects of the communications revolution and their implications for education.

### 2. Establishing a Corporate Focus for Action

The Ontario Ministry of Education is the first in Canada, and may be the first anywhere, to establish a distinct division to give leadership and a clear mandate for action with respect to

the use of the new information technology in education. The establishment of "Education Technology Development" on the divisional level and the appointment of a chief officer at the Assistant Deputy Minister level, ensuring representation at the most senior corporate levels of the Ministry, establishes the commitment of the government and acknowledges the importance of the issues being addressed.

### 3. Determining the Effect on Learning

The use of the new information technology in education, although already widespread and growing rapidly, is still, relatively speaking, in its infancy. The precise effects on cognition and learning are still largely un-

known, and research is vital to document more precisely these effects and to establish the most effective ways of utilizing the technology. It can also be anticipated that the introduction of a radical new technology, in education as in other fields, will lead to unanticipated effects, and these too must be documented.

It is necessary, therefore, to monitor carefully the rapidly growing research in these fields and to fund, to the extent possible, "de novo" studies which bear specifically on these issues as experienced in the Ontario context. To this end, research on the use and effects of the new technology is a major priority within the Ministry's contractual research program.

## First regional conference on arts well received

The arts need to be a more integral part of Ontario's education system, concluded participants in the first of a series of regional conferences addressing the Ministry's discussion paper, "The Arts in Ontario Schools."

Regional education officers, directors of education, superintendents of education, and coordinators of arts education programs met in Kingston on January 8 and 9 to discuss the concerns set forth in the Ministry of Education paper.

Participants in the opening conference were treated to a mixture of arts performances by and for school children and seminars on the specific aspects of the discussion paper. School and professional arts groups entertained in music, mime and dance. Members of the Frontenac County Brass and Percussion Ensemble performed a specially commissioned work by Professor C. Crawley; Ecole secondaire De La Salle students presented a number of mime sketches; Arête amused with off-beat mime; and David Secunda, artist-in-residence at Bayridge Elementary School in Frontenac County, and several Bayridge students staged Indian legends with student-created masks.

Andrew Lipchak, former director of the Ministry of Citizenship and Culture's Arts Branch, offered statistics to support the importance of culture. According to information gathered in 1980, the arts in Canada generate more than \$7 billion in annual revenue and employ 234,280 people, making culture the 11th most employment-intensive industry. Cultural workers operate very cheaply, with thousands earning no wages as volunteers. Lipchak concluded that this largely unrecognized economic sector will gain in importance over the next decade.

"The arts represent a sharing of values and ideas and foster a greater tolerance," he said. "They improve the livability of cities, encourage pride in the community and the nation, help give the country a sense of identity, contribute to the economic health of society through employment opportunities and fringe benefits to workers, attract investment in the community, stimulate tax revenues for the government and attract tourists."

The arts are more than just a ballet or opera, said Jane Scott, a trustee of the Lennox and



Addington County Board of Education. Arts begin in the community, but should be fostered in the classroom. The schools must nurture creativity, she said. "Art is the unspoken communion among all people," Scott added. "Self-expression is vital to our survival."

Charlotte Lemieux, Director of Education of the Ottawa Board of Education, spoke of arts as a global learning process and a part of all facets of life. "Before a child reacts to language," she said, "he or she reacts to music and responds to the arts. Young children are always reacting to new stimuli," Lemieux chronicled the development of artistic awareness from primary school to adulthood. Even as adults, we are still learning through the arts, she said.

"The artist seeks meaning beneath the surface," said Jeffrey Holmes of the Social Sciences and Humanities Research Council of Canada. He pointed out the importance of the combination of creative arts and science to the furtherance of society. He predicted a more arts-based society in the next century as the Baby Boomers age and demand entertainment for their leisure time. "The arts provide employment, therapy to the handicapped, entertainment for those who will be working less than 30 hours a week — they're the icing to life's cake," he said.

Bob Barton of the Ministry's Curriculum Branch discussed the relation of the arts to school

curricula. The arts contribute directly to the teaching and learning of other curricula, he said. "But the arts are primarily concerned with the expression of students' experiences," he said. "They crystallize students' feelings and perceptions. The arts don't just deal with the way things are, but with the way things might be." Teaching strategies should always engage the student's perceptions and responses, he added, and accommodate individual differences rather than force students into responses which are predictable.

Teachers need to communicate an interest in the arts to their students, said Reginald Shadbolt, Director of Education of the Frontenac County Board of Education. Teachers themselves are often intimidated by arts specialists and should be made to feel more confident in their own abilities to teach arts. "It's important to start a network of interested people," he said. Shadbolt advocated greater use of local resources and community involvement in school arts programs.

Discussion continues in a series of conferences to be held across the province: Mid-northern Ontario (Sault Ste. Marie, March 22; Sudbury, March 29); Western Ontario (London, April 26 and 27); and Central Ontario (dates and locations to be announced). Responses to the discussion paper will be collected and gathered into a revised report to be released during the 1985-86 school year.